

We claim:

1. The process for preparing propylene oxide which comprises
 - a) in a first reaction step reacting hydrogen and oxygen in a solvent/solid catalyst slurry to form hydrogen peroxide, propylene being essentially excluded from the reaction,
 - b) introducing propylene into the hydrogen peroxide and catalyst containing reaction mixture from the first reaction step, and
 - c) reacting said hydrogen peroxide in a second reaction step with propylene to form propylene oxide.
2. The process for preparing propylene oxide which comprises
 - a) in a first reaction zone reacting hydrogen and oxygen in a solvent/solid catalyst slurry to form hydrogen peroxide, propylene being essentially excluded from said zone,
 - b) transferring the hydrogen peroxide and catalyst containing reaction mixture to a second reaction zone, and
 - c) reacting said hydrogen peroxide in said second reaction zone with propylene to form propylene oxide.
3. The process of claim 1 wherein the solid catalyst is a noble metal on TS-1 catalyst.
4. The process of claim 3 wherein the noble metal comprises a mixture of noble metals.
5. The process of claim 1 wherein the solid catalyst is a palladium on TS-1 catalyst.
6. The process of claim 1 wherein the solvent is selected from the group consisting of water, C₁-C₄ alkanols, carbon dioxide, and mixtures thereof.
7. The process of claim 6 wherein the C₁-C₄ alkanol is methanol.
8. The process of claim 2 wherein the solvent is selected from the group consisting of water, C₁-C₄ alkanols, carbon dioxide, and mixtures thereof.
9. The process of claim 8 wherein the C₁-C₄ alkanol is methanol.